

## UTILIZATION BEHAVIOUR OF RICE GROWERS TOWARDS FARM MECHANIZATION IN VILLUPURAM DISTRICT

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### ABSTRACT

*In India, the majority of the population depends on agriculture for their livelihood. In recent years, due to non-availability of the labours and fragmentation of land, farmers are not able to undertake various field operations in time. Hence, utilization of farm implements and tools by farmers in farming is inevitable. As paddy is the major crop in Tamil Nadu and Villupuram is one of the predominant district in paddy area, the present study was undertaken to analyze the usage of various farm implements and machineries among the paddy farmers in Villupuram district. Two blocks were selected from Villupuram and six villages were selected as three villages from each block. The sampling method was derived by using Proportionate Random Sampling method. The data were collected from 108 respondents of six villages using a well-structured interview schedule. It was exposed that medium category of paddy respondents used the recommended farm implements and machineries in paddy cultivation and all the respondents utilized tractor attached with cage wheel, tractor attached with leveler and combine harvester. The study also disclosed that nobody had used the paddy implements like mould board plough, drum seeder, seed cum fertilizer drill for paddy, power operated conoweeder, power operated rotary weeder, self-propelled paddy harvester and thresher in their previous year paddy cultivation.*

**KEYWORDS:** Farm Mechanization, Utilization Behavior & Paddy Cultivation

Original Article 1

**Received:** Mar 18, 2019; **Accepted:** Apr 08, 2019; **Published:** Apr 07, 2019; **Paper Id.:** IJASRJUN201924

### INTRODUCTION

Paddy is an important crop in Tamil Nadu. Most of the farmers are engaged in paddy cultivation as a source of their livelihood. However, the cultivation cost is increasing enormously due to increased cost of labour and more charge for hiring. Hence, farm mechanization is the best solution to this cost escalation and it will increase the production and also help the farmers from drudgery. Most of the farm operations can be done with the help of farm machineries and implements. The major mechanized operations in paddy cultivation are land preparation, transplanting and harvesting. For these operations, farm machineries and implements can be exclusively used to complete in a timely manner and helps to displace the manual labourers from many stages of manual operations in paddy cultivation. Hence, this study aims to analyse the utilization behaviour of rice growers on farm mechanization. Jamal *et al.*, (2016) observed that a little more than three-fourths (76.36%) of the respondents had medium level of adoption of System of Rice Intensification (SRI) followed by 16.36 per cent and 7.27 per cent of the respondents in high and low levels of adoption respectively. Likewise, Shoba *et al.*, (2018) conducted a study on farm mechanization level of farmers in North Karnataka reported that nearly half (45.33%) of the respondents had medium level of overall adoption followed by 38.00 per cent of the respondents had low level of overall adoption

and the remaining 28.00 per cent had high overall adoption on tractor drawn implements. Alagesan, (2001) reported that about 83.33 per cent of the mechanized farmers had high level of adoption of seed drills followed by 16.67 per cent of the respondents who had medium level of adoption.

## METHODOLOGY

In this study, Villupuram district was selected as it is one of the more predominant district in paddy area. There are 22 blocks in Villupuram district. Among the 22 blocks, two blocks namely Kallakurichi and Gingee were selected based on the maximum area under paddy cultivation. Three revenue villages were selected from each block on the basis of having maximum paddy area under cultivation. Thus, a total of six revenue villages namely Parigam, Karadichithur (South) and Mathur were selected from Kallakurichi block and Sathiyamangalam, Aalampoondi and Konai were selected from Gingee block. The research design followed was ex-post facto research design. The respondents were selected as four per cent from the total paddy farmers from each village by using Proportionate Random Sampling method. Thus, a total of 108 respondents were selected. Seventeen farm implements and machineries had been selected by elaborate discussion with the Agricultural experts, Agricultural Engineering scientists and Extension scientists. The primary data were collected from 108 respondents using a structured and pre-tested interview schedule by face-to-face interaction with the farmers. The data were analysed using percentage analysis, mean and standard deviation.

## FINDINGS AND DISCUSSIONS

The utilization behaviour of respondents towards seventeen recommended farm equipment in paddy cultivation are discussed under two dimensions *viz.*, overall utilization behavior and implement wise utilization behaviour.

### Overall Utilization Behavior of Respondents on Paddy Farm Equipment

The findings on overall utilization behaviour of respondents on paddy farm equipment are presented in Table 1 as follows.

**Table 1: Distribution of Respondents based on their Overall Utilization Behaviour on Paddy Farm Implements and Machineries (n=108)**

S. No.	Category	Number	Per cent
1	Low	11	10.18
2	Medium	78	72.22
3	High	19	17.60
	<b>Total</b>	<b>108</b>	<b>100.00</b>

Table 1 stated that nearly three-fourths (72.22%) of the respondents had medium utilization of paddy farm equipment followed by high (19.00%) and low (17.60%) levels respectively.

It could be concluded from Table 1 that majority of the paddy respondents had medium level utilization behaviour towards farm implements and machineries. This might be that the respondents had medium awareness and knowledge level on paddy farm implements and machineries. The other reason might be that the respondents had a medium procurement and medium possession of farm implements and machineries.

The findings are in conformity with the findings of Nagaraj *et al.*, (2013).

### Implement Wise Utilization Behaviour of Respondents on Paddy Farm Equipment

Utilization behaviour of rice growers on each recommended paddy farm equipment were also studied in order to have an in-depth analysis and gain meaningful findings. The seventeen recommended farm implements and machineries in paddy cultivation were studied under six dimensions viz., field preparation implements and machineries, sowing and transplanting implements, weeding implements, plant protection equipment, harvesting equipment and straw handling equipment.

### Utilization Behaviour of Rice Growers on Field Preparation Implements and Machineries

The data collected on utilization of field preparation implements and machinery by the paddy respondents were analyzed using percentage analysis and are presented in Table 2.

**Table 2: Distribution of Respondents According to their Utilization Behaviour on Paddy Field Preparation Implements and Machineries (n=108)\***

S. No.	Items	Utilized		Not utilized	
		No.	Per cent	No.	Per cent
1	Disc plough	6	5.60	102	94.40
2	Mould board plough	-	-	108	100.00
3	Tractor attached with cage wheel	108	100.00	-	-
4	Power tiller attached with rotavator	82	75.90	26	24.10
5	Tractor operated leveler	108	100.00	-	-

\*Multiple Responses Obtained

From Table 2, it could be reported that cent per cent (100.00%) of the respondents used tractor attached with cage wheel and tractor operated leveler in the field followed by 75.90 per cent of the respondents utilized power tiller attached with rotavator. Only 5.60 per cent of the respondents adopted disc plough. None of the respondents utilized mould board plough for primary tillage operation in their field.

The reason for the above result might be that tractor attached with cage wheel and power tiller attached with rotavator could be used for both shallow ploughing (which will stagnate water and is more favourable for rice cultivation) and puddling but disc plough and mould board plough could be used only for deep ploughing operation and not for ploughing. Hence, only 5.60 per cent of the respondents utilized disc plough and none of them adopted mould board plough in field preparation.

### Utilization Behaviour of Respondents on Paddy Sowing and Transplanting Implements

The findings on utilization behaviour on sowing and transplanting implements by the paddy respondents are presented in Table 3.

**Table 3: Distribution of Respondents based their Utilization Behaviour on Paddy Sowing and Transplanting Implements (n=108)\***

S. No.	Items	Utilized		Not utilized	
		No.	Per cent	No.	Per cent
1	Paddy transplanter	20	18.50	88	81.50
2	Drum seeder	-	-	108	99.10
3	Seed cum fertilizer drill for paddy	-	-	108	100.00

\*Multiple Responses Obtained

The above Table showed that one-fifth (18.50%) of the respondents used paddy transplanter and none of the respondents utilized drum seeder and seed cum fertilizer drill in paddy cultivation for sowing and transplanting operation.

It could be inferred from the above finding that 18.50 per cent of the respondents used paddy transplanter for transplanting operation. This might be due to medium availability of labour for transplanting operation in the study area and also there was less availability of paddy transplanters in nearby hiring centres of the study area. None of the respondents utilized drum seeder and seed cum fertilizer drill for sowing operation. This might be due to less awareness on drum seeder and seed cum fertilizer drill for paddy among the respondents.

#### Utilization Behavior of Respondents on Weeding Implements in Paddy Cultivation

The data pertinent to the utilization behaviour of respondents of paddy weeding implements were analyzed and are presented in Table 4.

**Table 4: Distribution of Respondents according to their Utilization Behaviour on Paddy Weeding Implements**  
(n=108)\*

S. No.	Items	Utilized		Not utilized	
		No.	Per cent	No.	Per cent
1	Power operated conoweeder	-	-	108	100.00
2	Power operated rotary weeder	-	-	108	100.00

\*Multiple Responses Obtained

It could be concluded from Table 4 that none of the respondents used power operated conoweeder and power operated rotary weeder in their field.

This might be that none of the respondents had awareness on power operated conoweeder and power operated rotary weeder. The other reason might be that, to implement conoweeder and rotavator in weeding operation, the spacing should be adjusted at the time of sowing itself and also due to sufficient labour in the study area.

#### Utilization Behaviour of Respondents on Plant Protection Equipment

The findings on utilization behaviour of paddy respondents of respondents on plant protection equipment in paddy cultivation are presented in Table 5.

**Table 5: Distribution of Respondents according to their Utilization Behaviour on Plant Protection Equipment in Paddy Cultivation**  
(n=108)\*

S. No.	Items	Utilized		Not utilized	
		No.	Per cent	No.	Per cent
1	Knapsack power sprayer	99	91.70	9	8.30
2	Hand operated knapsack sprayer	18	16.70	90	83.30
3	Battery operated low volume sprayer	10	9.30	98	90.70

\*Multiple Responses Obtained

It was revealed from Table 5 that a vast majority (91.70%) of the respondents utilized knapsack power sprayer followed by 16.70 per cent of the respondents adopted hand operated knapsack sprayer. Only 9.30 per cent of the respondents utilized battery operated low volume sprayer for spraying operation.

The reason for the above result might be that the power sprayer had high pressure, more area coverage and there was a little drudgery when compared to hand operated knapsack sprayer which had less pressure, less area coverage and more drudgery and battery operated low volume sprayer which had less pressure and less field capacity.

### Utilization Behavior of Rice Growers on Harvesting Equipment

The data collected on utilization behaviour of respondents on harvesting equipment in paddy cultivation were analyzed and are presented in Table 6.

**Table 6: Distribution of Respondents based on their Utilization Behaviour on Paddy Harvesting Equipment (n=108)\***

S. No.	Items	Utilized		Not utilized	
		No.	Per cent	No.	Per cent
1	Combine harvester	108	100.00	-	-
2	Self-propelled paddy harvester	-	-	108	100.00
3	Thresher	-	-	108	100.00

\*Multiple Responses Obtained

Table 6 opined that cent per cent (100.00%) of the respondents utilized combine harvester and none of the respondents used self-propelled paddy harvester and thresher for harvesting operation.

It could be interpreted from Table 6 that all the respondents adopted combine harvester and no one utilized self-propelled paddy harvester and thresher. This might be the reason that combine harvester was used at field level directly for harvesting and also it also required only one labour for its operation. In case of thresher, labour requirement was more and it could not be operated directly at the field level for harvesting. Due to less awareness by the respondents on self-propelled paddy harvester, no one used it for harvesting.

The findings for drum seeder and seed cum fertilizer drill for paddy are in conformity with the findings of Hemasankari (2017).

### Utilization Behaviour of Respondents on Paddy Straw Handling Equipment

The distribution of respondents according to their utilization behaviour on straw handling equipment in paddy cultivation are given in Table 7.

**Table 7: Distribution of Respondents Based on their Utilization Behaviour on Paddy Straw Handling Equipment (n=108)**

Items	Utilized		Not utilized	
	No.	Per cent	No.	Per cent
Baler	83	76.90	25	23.10

It could be evident from Table 7 that slightly more than three-fourths (76.90%) of the respondents used baler for straw handling operation. This might be due to the reason that there was a great demand for paddy straw among farmers to feed their cattle. The other reason might be that the paddy straw processed by baler could be stored conveniently.

## SUMMARY AND CONCLUSIONS

It could be concluded from the above findings that all the respondents adopted tractor attached with cage wheel, tractor operated leveler and combine harvester. It was also found that none of the respondents utilized mould board plough, drum seeder, seed-cum fertilizer drill in paddy cultivation, power operated conoweeder, power operated rotary weeder and self-propelled paddy harvester. Hence, it is suggested that, to increase the utilization behaviour of paddy growers on farm mechanization, frequent awareness camp should be conducted in the study area and also the drudgery insome equipment like hand operated knapsack sprayer should be reduced. Awareness should be made on specific equipment like drum seeder, seed cum fertilizer drill for paddy, power operated conoweeder and power operated rotary weeder. Some equipment like combine harvester and paddy transplanter should be made available to the farmers in smaller size with low cost but the capacity of the machine should not be reduced. The puddling operation has to be included in primary tillage implements. By these suggested ways, the utilization of farm mechanization in paddy cultivation can be increased.

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